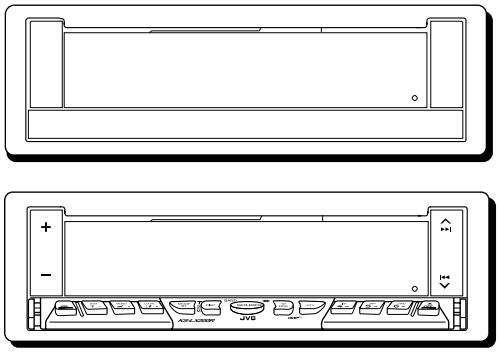
JVC

SERVICE MANUAL

CASSETTE RECEIVER

KS-LX200R



Area Suffix

E ----- Continental Europe
EX -------- Central Europe

RDS EON

BBE II

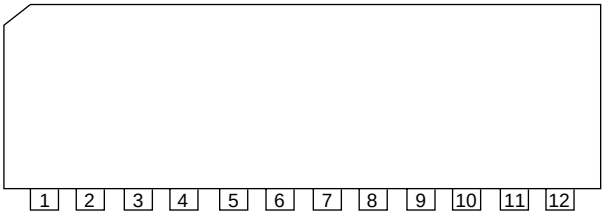
Contents

No.49573
Oct. 2000

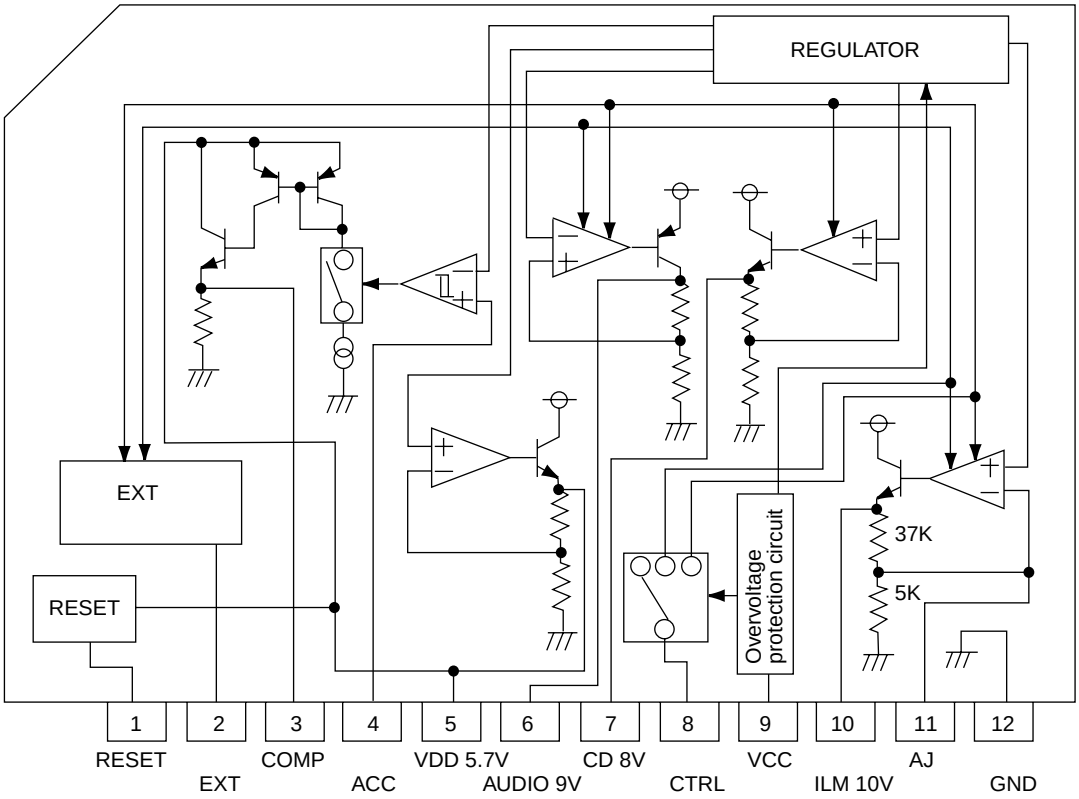
Description of major ICs

■ BA4905-V3 (IC961) : Regulator

1.Pin layout



2.Block diagram

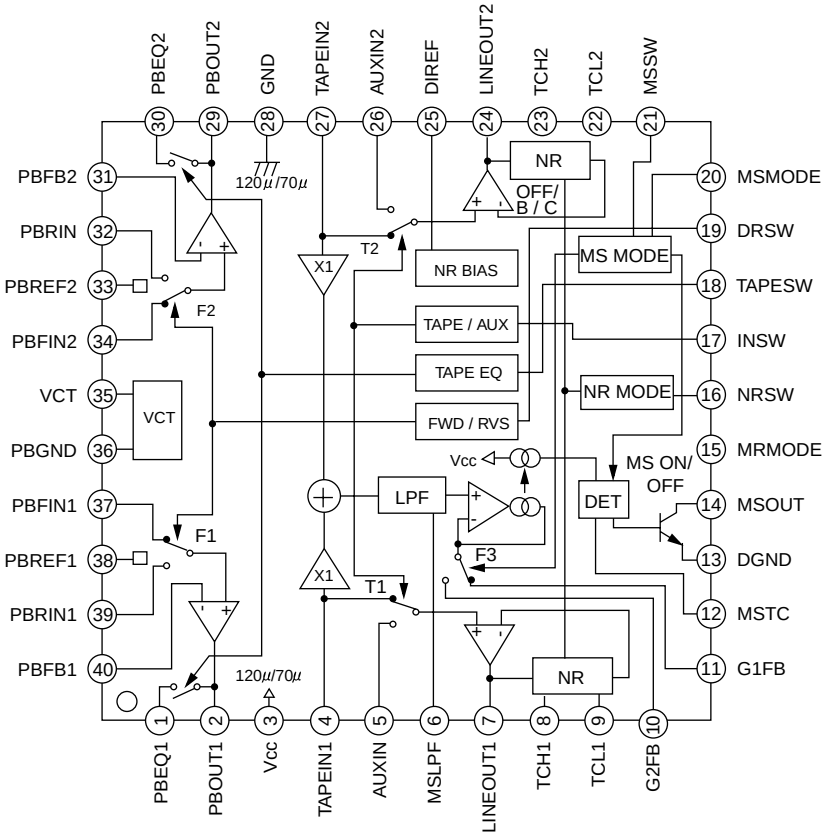


3.Pin function

Pin no.	Symbol	Function
1	RESET	If VDD voltage becomes 4V or less.RESET output becomes low level.
2	EXT output	This output voltage is approximately 0.5V lower than VCC. and max output current is 300mA.
3	COMP output	A voltage supply for ACC block. This output voltage is approximately 0.7V lower than VDD'S. The max output current is 100mA.
4	ACC	Control of the COMP output by inputting voltage.
5	VDD output	This output voltage is 5.7V, and max output current is 100mA. This voltage supply is for microcomputer. Whenever back up voltage supply is connected, the output keeps on running.
6	AUDIO output	This output voltage is 9.0v, and max output current is 500mA. This voltage supply for AUDIO.
7	CD output	This output voltage is 8.0V, and max output current is 1A. This voltage supply for CD.
8	CTRL	Output selector of CD. AUDIO, ILM and EXT.
9	VCC	To be connected with the BACK UP of car.
10	ILM output	This output voltage is 10V, and max output current is 500mA. Output voltage is adjustable.
11	AJ	Putting a resistance between ILM and AJ or between AJ and GND makes ILM output voltage adjustable.
12	GND	Ground.

■ CXA2510AQ (IC401) : Head AMP / Dolby

1. Pin layout & Block diagram

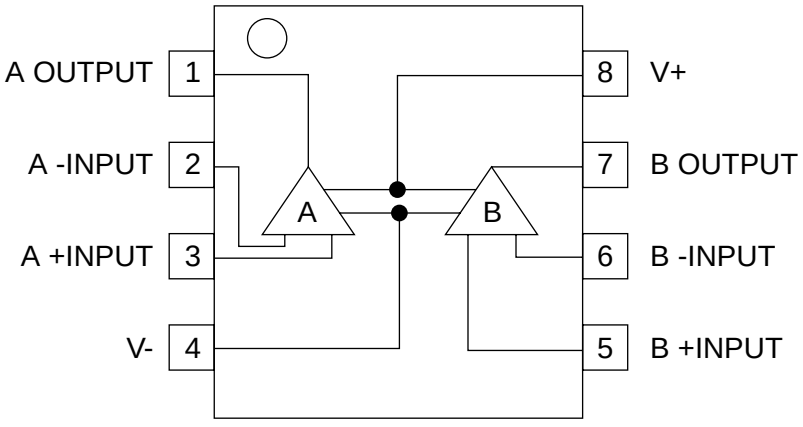


2. Pin functions

Pin No.	Symbol	I/O	Functions
1	PBEQ1	O	Resistance for selecting the equalizer amplifier time constant.
2	PBOUT1	O	Playback equalizer amplifier out put.
3	Vcc	-	Power supply
4	TAPEIN1	I	TAPE input.
5	AUXIN1	I	External input.
6	MSLPF	-	Cut-off frequency adjustment of the music sensor LPF.
7	LINEOUT1	O	Line out.
8	TCH1	-	Time constant for the HLS.
9	NC	-	Non connection.
10	G2FB	-	Music signal interval detection level setting.
11	G1FB		
12	MSTC		Time constant for detecting the music signal interval.
13	DGND	-	Logic ground (Connect to GND)
14	MSUOT	O	Music sensor output.
15	NC	I	Non connection.

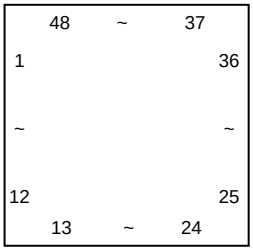
Pin No.	Symbol	I/O	Functions
16	NRSW	I	Dolby NR control L:NR OFF H:NR ON
17	INSW	I	Line amplifier input select control L:TAPE IN H:AUX IN
18	METAL	I	Playback equalizer amplifier control L:120us H:70us
19	DRSW	I	Head select control L:FORWARD H:REVERSE
20	FF/REW	I	Music sensor mode control Low(open):G1 High:G2
21	MSSW	I	Music sensor control Low(open):MS on High:MS OFF
22	NC	-	Non connection
23	TCH2	-	Time constant for the HLS
24	LINEOUT2	O	Line output
25	DIREF	-	Resistance for setting the reference current (Connects 20(18)KΩ between DIREF pin and GND for the standard setting.)
26	NC	-	Non connection.
27	TAPEIN2	I	TAPE input.
28	GND	-	To ground.
29	PBOUT2	O	Playback equalizer amplifier output.
30	PBEQ2	O	Resistance for selecting the playback equalizer amplifier time constant
31	PBFB2	I	Playback equalizer amplifier feedback.
32	NC	-	Non connection.
33	PBREF2	O	Playback equalizer amplifier reference (Vcc/2 output)
34	PBFIN2	I	Playback equalizer amplifier input (FORWARD head connected)
35	VCT	O	Center (Vcc/2 output)
36	PBGND	-	Playback equalizer amplifier ground (Connect to ground)
37	PBFIN1	I	Playback equalizer amplifier input (FORWARD head connected)
38	PBREF1	O	Playback equalizer amplifier reference (Vcc/2 output)
39	NC	-	Non connection.
40	PBFB1	I	Playback equalizer amplifier feedback.

■ NJM4565M-W (IC951,IC171,IC323) : Ope amp.

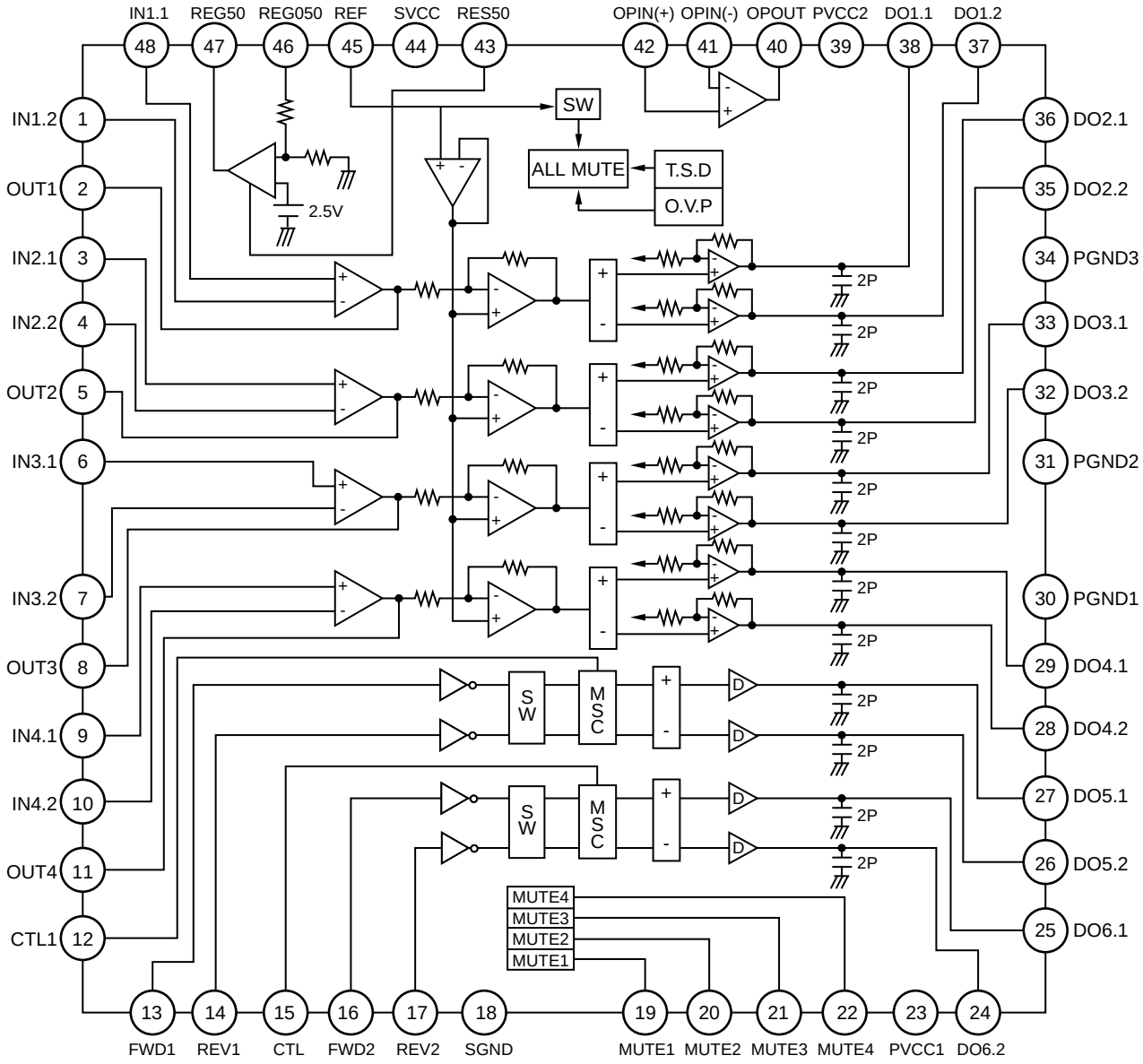


■ KA3031 (IC831) : Motor driver

1. Pin layout



2. Block diagram

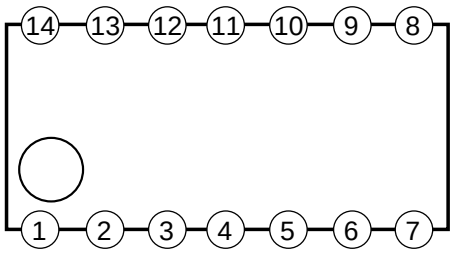


3. Pin function

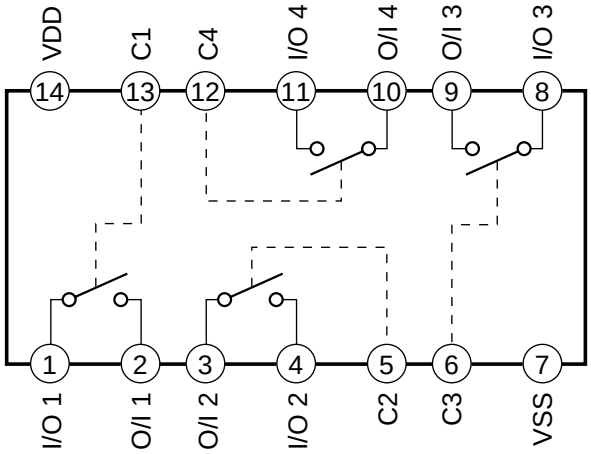
Pin No.	Symbol	I/O	Function	Pin No.	Symbol	I/O	Function
1	IN1.2	I	CH 1 op-amp input (-)	25	DO6.1	O	CH 6 drive outout
2	OUT1	O	CH 1 op-amp output	26	DO5.2	O	CH 5 drive output
3	IN2.1	I	CH 2 op-amp input (+)	27	DO5.1	O	CH 5 drive output
4	IN2.2	I	CH 2 op-amp input (-)	28	SO4.2	O	CH 4 drive output
5	OUT2	O	CH 2 op-amp output	29	DO4.1	O	CH 4 drive output
6	IN3.1	I	CH 3 op-amp input (+)	30	PGND		Power ground
7	IN3.2	I	CH 3 op-amp input (-)	31	PGND	-	Power ground
8	OUT3	O	CH 3 op-amp output	32	DO3.2	O	CH 3 drive output
9	IN4.1	I	CH 4 op-amp input(+)	33	DO3.1	O	CH 3 drive output
10	IN4.2	I	CH 4 op-amp input (-)	34	PGND		Power ground
11	OUT4	O	CH 4 op-amp output	35	DO2.2	O	CH 2 drive output
12	CTL1	I	CH 5 motor speed control	36	SO2.1	O	CH 2 drive output
13	FWD1	I	CH 5 forward input	37	SO1.2	O	CH 1 drive output
14	REW1	I	CH 5 reverse input	38	DO1.1	O	CH 1 drive output
15	CTL2	I	CH 6 motor speed control	39	PVCC2	-	Power supply voltage (For CH 1, CH 2, CH 3, CH 4)
16	FED2	I	CH 6 torward input	40	OPOUT	O	Opamp output
17	REW2	I	CH 6 reverse input	41	OPIN(-)	I	Opamp input (-)
18	SGND	-	Signal ground	42	OPIN(+)	I	Opamp input (+)
19	MUTE1	I	CH 1 mute	43	RES50	I	Regulator 5V reset
20	MUTE2	I	CH 2 mute	44	SVCC	-	Signal supply voltage
21	MUTE3	I	CH 3 mute	45	REF	I	Bias voltage input
22	MUTE4	I	CH 4 mute	46	REG050	O	regulator 5V output
23	PVCC1	-	Power supply voltage (For CH 5, CH 6)	47	REG50	O	Regulator output
24	DO6.2	O	CH 6 drive output	48	IN1.1	I	CH 1 opamp onput (+)

■ BU4066BCF-X (IC322) : Switch

1.Pin l ayout

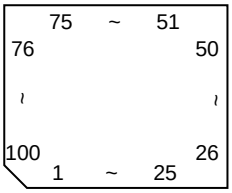


2.Block diagram



■ UPD784215AGC113 (IC701) : UNIT CPU

1.Pin layout



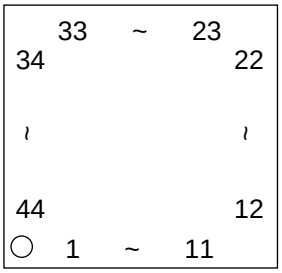
2.Pin function

Pin No.	Symbol	I/O	Function
1	FF/REW	O	Output for input signal level switching for MS.
2	DOLBY	O	Dolby on "H" output.
3	MS-OUT	O	MS output.
4	F/R	I	Fwd, REV direction switch signal input.
5	HOLD	-	Non connect
6	TRAYCNT	O	Tray light control signal output.
7	DIMMER-OUT	O	Dimmer signal output.
8	LCD-POWER	-	Non connect.
9	VDD	-	Power supply terminal.
10	X2	O	Connecting the crystal oscillator for system main clock.
11	X1	I	Connecting the crystal oscillator for system main clock.
12	VSS	-	Connect to GND.
13	XT2	O	Connecting the crystal oscillator for system sub clock.
14	XT1	I	Connecting the crystal oscillator for system sub clock.
15	RESET	I	System reset signal input.
16	SW1	I	Cassette mechanism detect switch.
17	BUS-IN	I	J-BUS signal cut in input.
18	PS2	I	Power save 2.
19	CURUISE	I	CRUISE signal input.
20	RDS-SCK	I	RDS selial clock input.
21	RDS-DA	I	RDS data input.
22	REMOCON	I	Remove control signal input.
23	AVDD	-	Power supply terminal.
24	AVREF0	-	Connect to GND.
25	NC	-	Connect to GND.
26	NC	-	Connect to GND.
27	KEY0	I	Key control 0 input.
28	KEY1	I	Key control 1 input.
29	KEY2	I	Key control 2 input.
30	LEVEL	I	Level meter signal input.
31	SQ	I	S.quality level input.
32	S.METER	I	S.meter level input.
33	AVSS	-	Connect to GND.
34	W-VOL	O	Woofer volume signal output.
35	DOT CONT	O	Dot contrast signal input.
36	AVREF	-	Power supply terminal.
37	BUS-SI	I/O	J-BUS data I/O terminal.
38	BUS-SO	O	J-BUS data output.
39	BUS-SCK	I/O	J-BUS serial clock signal I/O.
40	STAGE2	I	Initial setting.
41	LCD-DA	O	Data output for LCD driver.
42	LCD-CL	O	Clock otput for LCD driver.
43	LCD-LEI	O	Chip enable 1 output for LCD driver.
44	BUZZER	O	BUZZER control signal output.
45	E2PR-DA-I	I	Data input terminal from EEPROM.
46	E2PR-DA-O	O	Data output terminal from EEPROM.
47	E2PR-CLK	I/O	Data input terminal from EEPROM.
48	BUS-I/O	I/O	J-BUS I/O signal terminal.
49	TM0	O	Tray motor negative signal output.
50	TM1	O	Tray motor positive signal output.

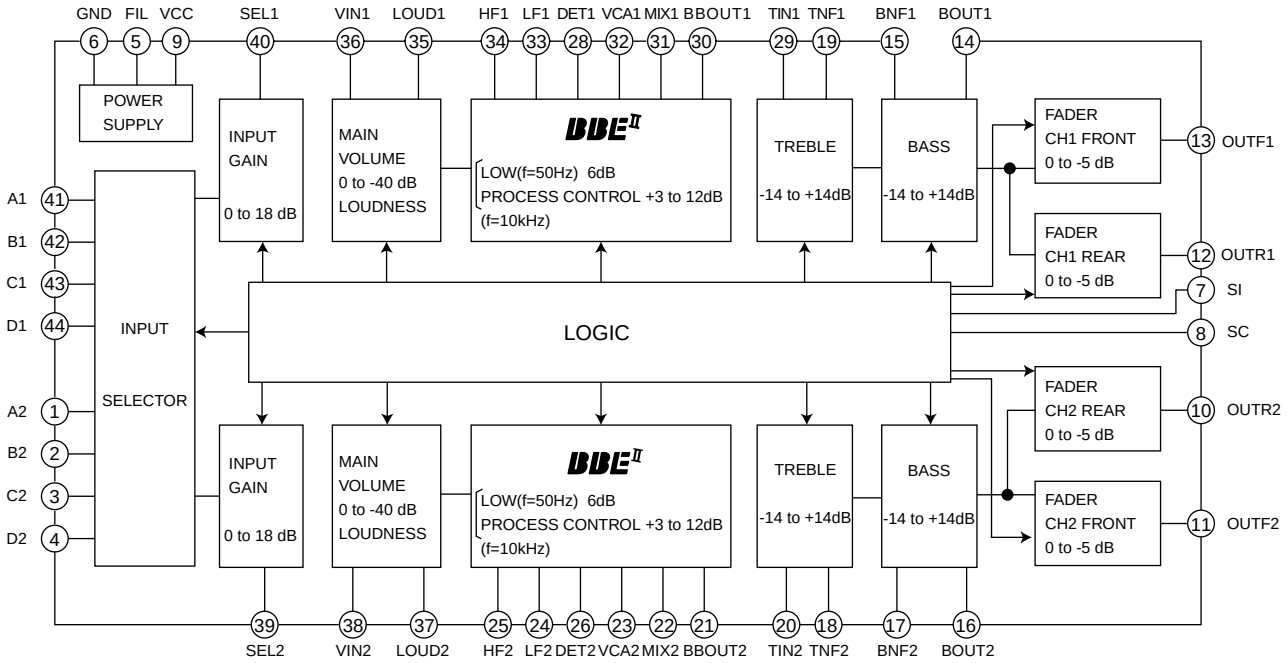
Pin No.	Symbol	I/O	Function
51	DM0	O	Door motor negative signal output.
52	DM1	O	Door motor positive signal output.
53	ST	I	Stereo signal input.
54	LOCAL	-	Non connect.
55	MONO	O	Manual ON/OFF select signal output.
56	CA-SW1	I	DOOR/TRAY open/close detect switch signal input.
57	CA-SW2	I	DOOR/TRAY open/close detect switch signal input.
58	CA-SW3	I	DOOR/TRAY open/close detect switch signal input.
59	CA-SW4	I	DOOR/TRAY open/close detect switch signal input.
60	CA-SW5	I	DOOR/TRAY open/close detect switch signal input.
61	VCR-CONT	-	Non connect.
62	AFCK	O	AF check output.
63	SEEK/STOP	O	AUTO SEEK/STOP select signal output.
64	SD	I	Station detector input.
65	FM/AM	O	FM/AM select signal output.
66	PLL-CE	O	Chip enable signal output.
67	PLL-DA	O	Data output.
68	PLL-CK	O	Clock signal output.
69	BAND IN	I	AM detect signal input.
70	TEL-MUTE	I	Telephone.
71	AMP KILL	-	Non connect.
72	VSS	-	Connect to GND
73	DIMMER-IN	I	DIMMER signal input.
74	DSI	I	Power save 1.
75	POWER	O	Power ON/OFF select signal output.
76	CD-ON	-	Non connect.
77	MUTE	O	Mute signal output.
78	W-LPF1	O	Woofer LPF 1 signal output.
79	W-LPF2	O	Woofer LPF 2 signal output.
80	W-MUTE	O	Woofer mute signal output.
81	VDD	-	Power supply.
82	VOL-DA	O	Data output.
83	VOL-CLK	O	Clock signal output.
84	CF-SEL	I	CF select signal input.
85	NC	-	Non connect.
86	LCD RST	O	LCD reset signal output.
87	LCD-CE2	O	Chip enable 2 output.
88	DMK	O	Motor speed control signal output.
89	TMK	O	Tray motor control signal output.
90	STAGE1	I	Initial setting.
91	MOTOR	O	Mecha Motor signal output.
92	MODE	I	Mecha mode position detection input.
93	STANDBY	I	Standby position derection input.
94	TEST	I	Test terminal
95	TAPE-IN	O	Cassette in detection input.
96	SUBMO-	O	Sub motor clock direction drive output.
97	SUBMO+		Sub motor clock opposite direction drive output.
98	TAPE-END	I	Tape end detection input.
99	KICK	O	Kick output.
100	VOICE IN	I	Voice control signal input.

■ BD3860K (IC911) : E. volume

1. Pin layout



2. Block diagram

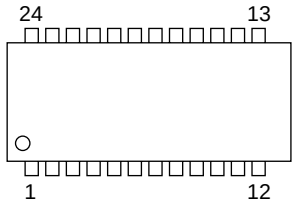


3. Pin function

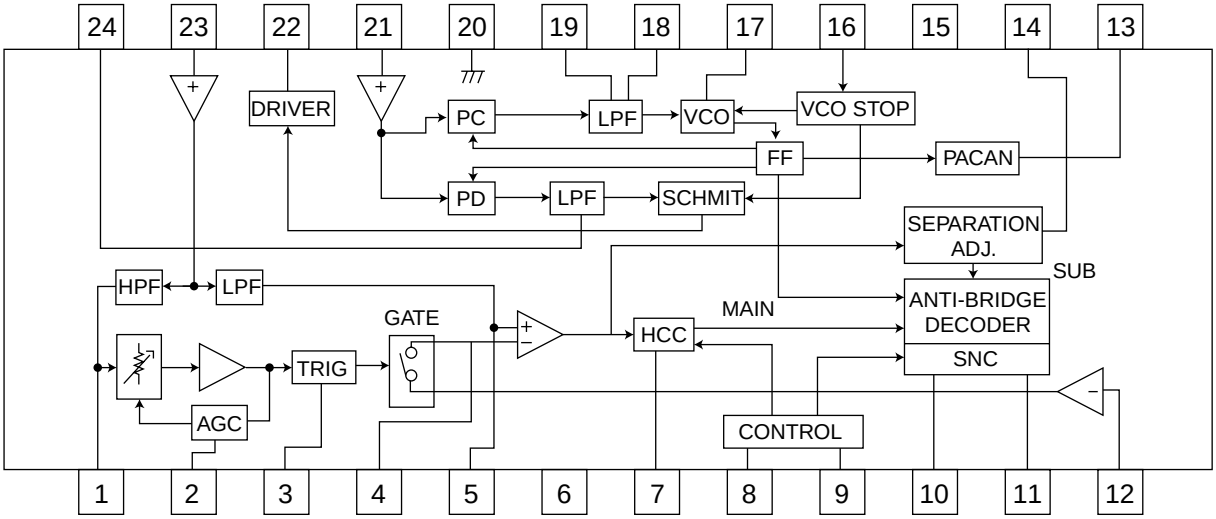
Pin No.	Symbol	Function	Pin No.	Symbol	Function
1	A2	CH2 input terminal A	23	VCA2	CH2 high frequency VCA output terminal
2	B2	CH2 input terminal B	24	LF2	CH2 low frequency filter setting terminal
3	C2	CH2 input terminal C	25	HF2	CH2 high frequency filter setting terminal
4	D2	CH2 input terminal D	26	DET2	CH2 high frequency attack release time setting
5	FIL	1/2 VCC terminal	27	NC	Non connect
6	GND	Ground terminal	28	DET1	CH1 high frequency attack release time setting
7	SI	Serial data input terminal	29	TIN1	CH1 treble input terminal
8	SC	Serial clock input terminal	30	BBOUT1	CH1 BBE II signal output terminal
9	VCC	Power supply	31	MIX1	CH1 output mix amp. negative input terminal
10	OUTR2	CH2 rear output terminal	32	VCA1	CH1 high frequency VCA output terminal
11	OUTF2	CH2 front output terminal	33	LF1	CH1 low frequency filter setting terminal
12	OUTR1	CH1 rear output terminal	34	HF1	CH1 high frequency filter setting terminal
13	OUTF1	CH1 front output terminal	35	LOUD1	CH1 loudness filter setting terminal
14	BOUT1	CH1 bus filter setting terminal	36	VIN1	CH1 main volume input terminal
15	BNF1	CH1 bus filter setting terminal	37	LOUD2	CH2 loudness filter setting terminal
16	BOUT2	CH2 bus filter setting terminal	38	VIN2	CH2 main volume input terminal
17	BNF2	CH2 bus filter setting terminal	39	SEL2	CH2 input gain output terminal
18	TNF2	CH2 treble filter setting terminal	40	SEL1	CH1 input gain output terminal
19	TNF1	CH1 treble setting terminal	41	A1	CH1 input terminal A
20	TIN2	CH2 treble input terminal	42	B1	CH1 input terminal B
21	BBOUT2	CH2 BBE II signal output terminal	43	C1	CH1 input terminal C
22	MIX2	CH2 output mix amp negative input terminal	44	D1	CH1 input terminal D

■ LA3460M-X (IC31) : FM noise canceller & Stereo MPX demodulator

1. Pin layout



2. Block diagram

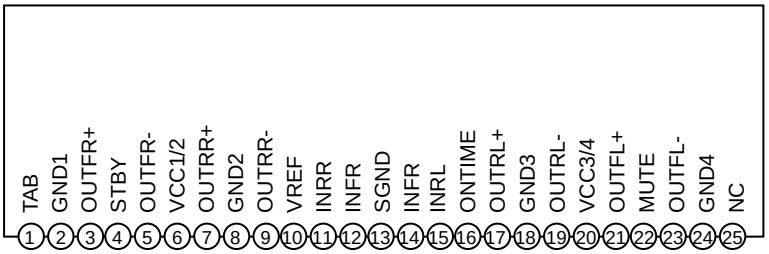


3. Pin function

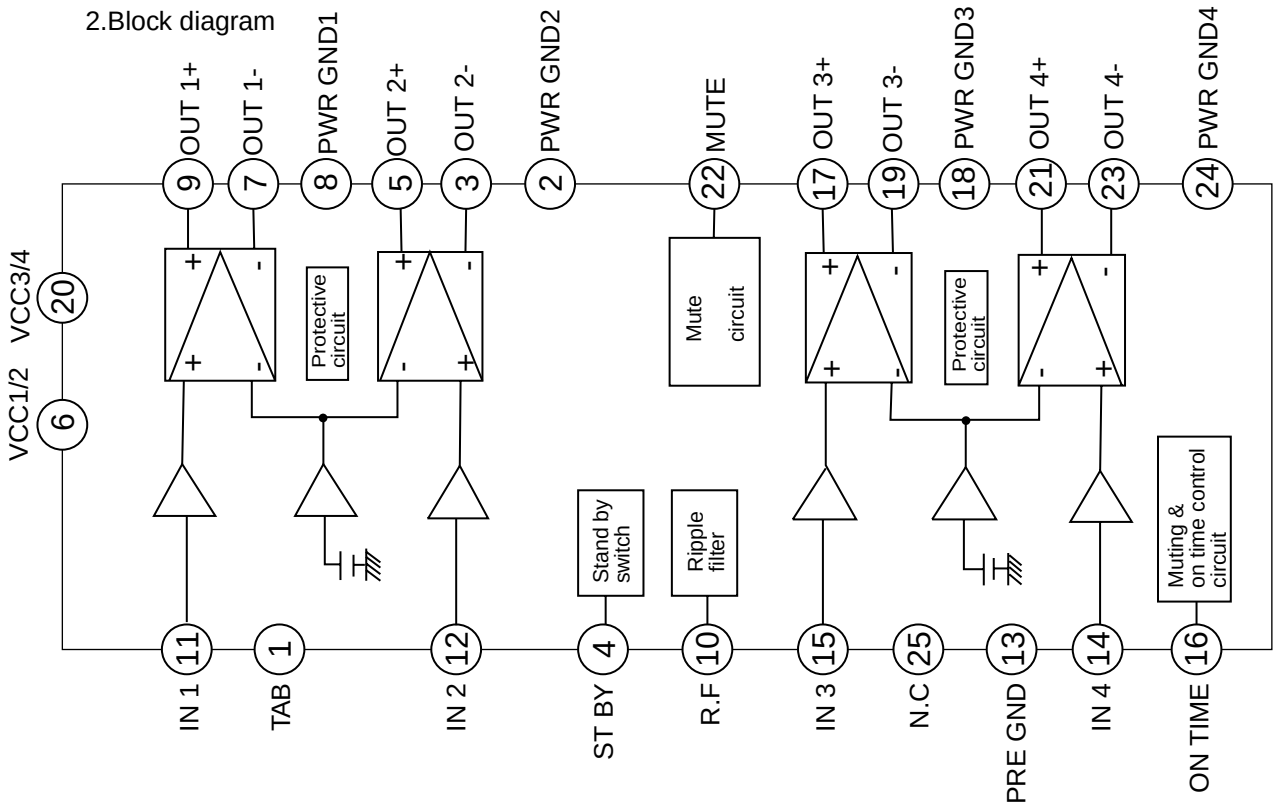
Pin No.	Function	Description
1	Noise sense	Noise sensitivity adjustment
2	Noise AGC	
3	Gate time	
4	Signal hold	
5	Pilot output	
6	Vcc	Vcc=+8.0V
7	Capacitor for HCC	High pass filter
8	SNC control	Stereo noise controlled voltage
9	HCC control	High cut controlled voltage
10	Lch output	
11	Rch output	
12	Pican input	pilot cancel signal input
13	Pican output	pilot cancel signal outpt
14	Separation ADJ	
15	NC	
16	NC	
17	456kHz OSC	Ceramic resonator
18	Phase comp LPF (+)	Phase comparator low pass filter
19	Phase comp LPF (-)	Phase comparator low pass filter
20	GND	
21	PLL input	Phase locked loop signal input
22	Stereo indicator	Active low
23	Composite input	Composite signal input
24	Pilot det LPF	

■ LA4743B (IC941) :Power amp

1.Terminal layout



2.Block diagram

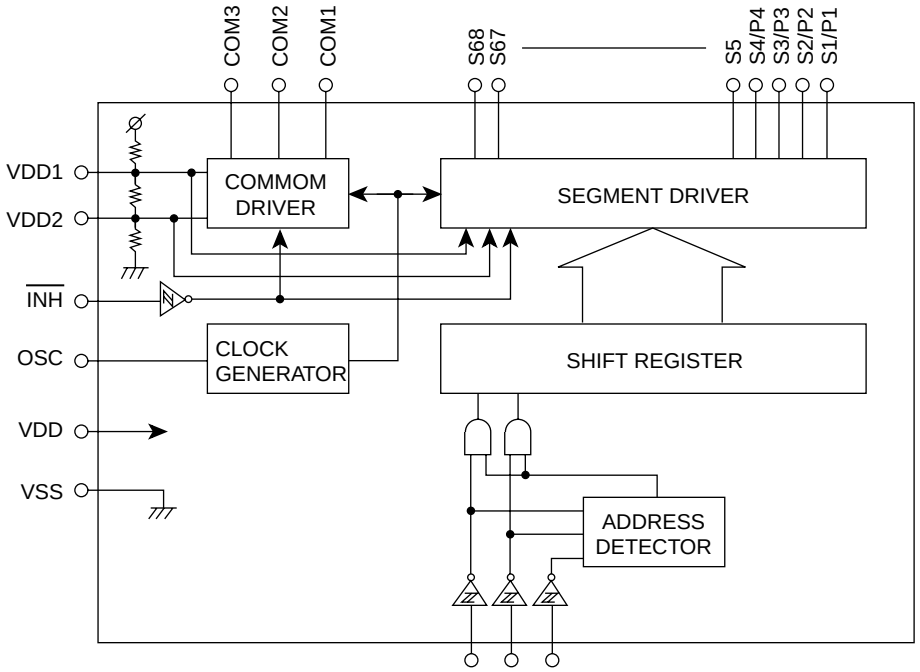


3.Pin function

Pin No.	Symbol	Function	Pin No.	Symbol	Function
1	TAB	Header of IC	14	LFIN	Front Lch input
2	GND1	Power GND	15	LRIN	Rear Lch input
3	RFO-	Output (-) for front Rch	16	ONTIME	Power on time control
4	STBY	Stand by input	17	LRO+	Output (+) for rear Lch
5	RFO+	Output (+) for front Rch	18	GND3	Power GND
6	VCC1/2	Power input	19	LRO-	Output (-) for rear Lch
7	RRO-	Output (-) for rear Rch	20	VCC3/4	Power input
8	GND2	Power GND	21	LFO+	Output (+) for front
9	RRO+	Output (+) for rear Rch	22	MUTE	Muting control input
10	R.F	Ripple filter	23	LFO-	Output (-) for front
11	RRIN	Rear Rch input	24	GND4	Power GND
12	RFIN	Front Rch input	25	NC	Non connection
13	SGND	Signal GND			

■ LC75873NW (IC601) : LCD driver

1.Block diagram

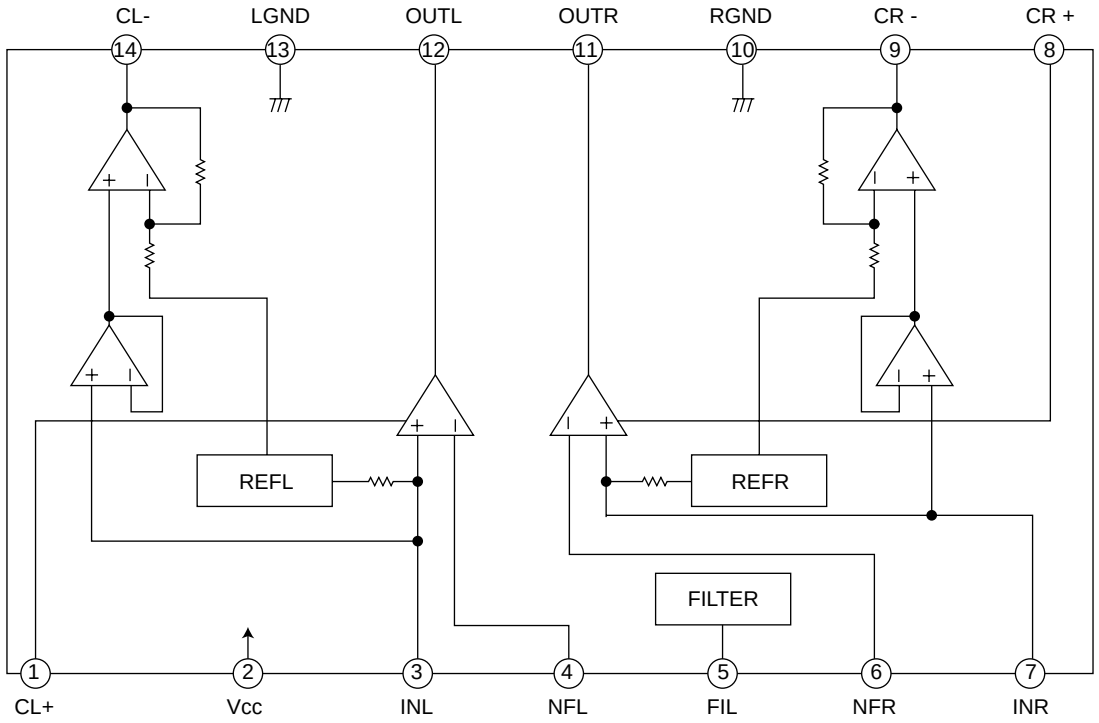


2.Pin functions

Pin No.	Symbol	I/O	Description
1~66	S3~S68	O	Segment Output.
67~69	COM1~3	O	Common Driver Output.
70	VDD	-	Power Supply Connection.
71	VDD1	I	Used for applying the LCD drive 2/3 bias voltage externally. Must be connected to VDD2 when a 1/2 bias drive scheme in used.
72	VDD2	I	Used for applying the LCD drive 1/3 bias voltage externally. Must be connected to VDD1 when a 1/2 bias drive scheme in used.
73	VSS	-	Power supply connection.
74	OSC	I/O	Oscillator connection. An oscillator circuit is formed by connecting an external resistor and capacitor to this pin.
75	INH	I	Display off control input.
76	$\overline{CE}$	I	Chip enable input.
77	CLOCK	I	Synchronization clock input.
78	DI	I	Serial data input.
79	S1	O	Signal output.
80	S2	O	Signal output.

■ BA3220FV-X (IC301) : Driver

1. Pin layout & Block diagram

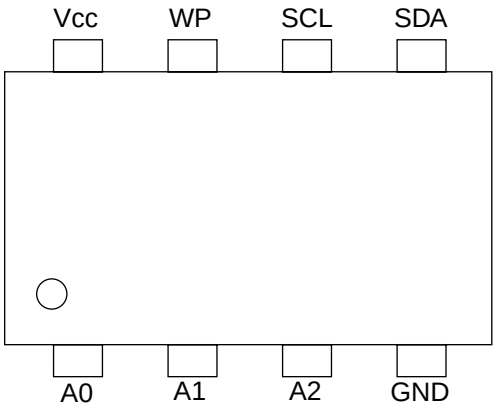


2. Pin function

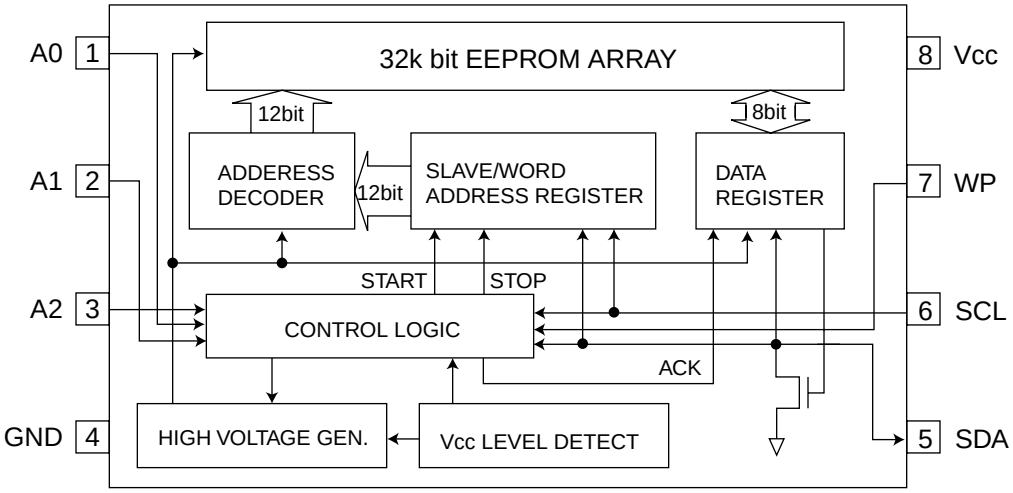
Pin No.	Symbol	Function
1	CL+	Powe supply terminal for amp.
2	Vcc	power supply terminal.
3	INL	input terminal.
4	NFL	Negative feedback terminal.
5	FIL	Filter terminal.
6	NFR	Negative feedback terminal.
7	INR	Input terminal
8	CR+	Power supply terminal for amp.
9	CR-	Output terminal of internal amp.
10	RGND	Rch GND terminal.
11	OUTR	Rch output terminal.
12	OUTL	Lch output terminal.
13	LGND	Lch GND terminal.
14	CL-	Output terminal of internal amp.

■ BR24C32F-X (IC703) : EEPROM

1. Pin layout



2. Block diagram

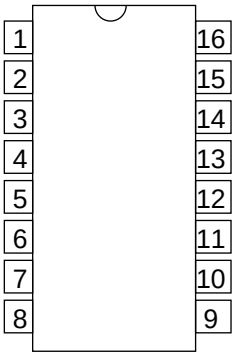


3. Pin function

Pin No.	I/O	Functions
Vcc	-	Power supply
GND	-	Ground (0V)
AO,A1,A2	IN	Slave address set
SCL	IN	Serial clock input
SDA	I/O	Slave and word address/Serial data output
WP	IN	Write protect input

■ SAA6579T-X (IC51) : RDS demodulator

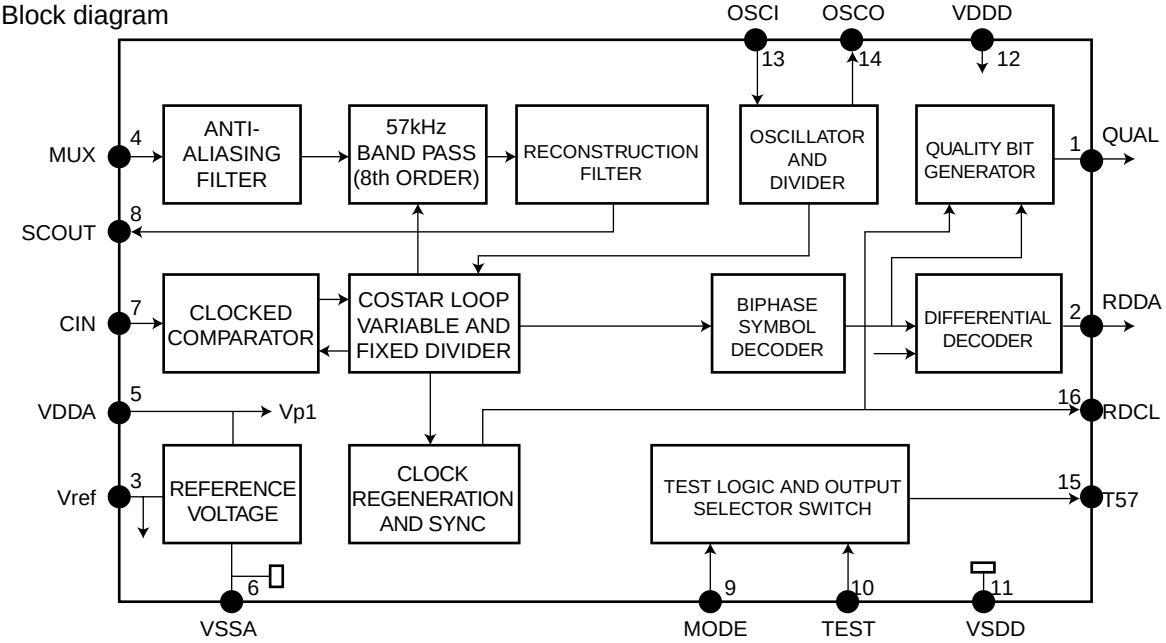
1. Pin layout



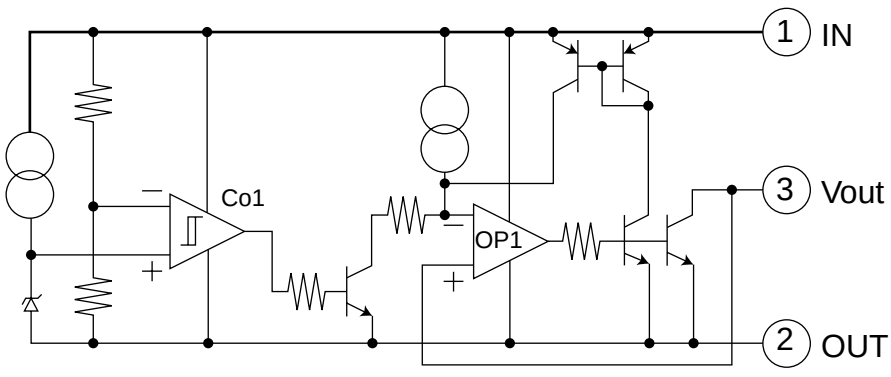
2. Pin function

Pin No.	Symbol	Function
1	QUAL	Quality indication output
2	RDDA	RDS data output
3	Vref	Reference voltage output (0.5VDDA)
4	MUX	Multiplex signal input
5	VDDA	+5V supply voltage for analog part
6	VSSA	Ground for analog part (0V)
7	CIN	Sub carrier input to comparator
8	SCOUT	Sub carrier output of reconstruction filter
9	MODE	Oscillator mode / test control input
10	TEST	Test enable input
11	VSSD	Ground for digital part (0V)
12	VDDD	+5V supply voltage for digital part
13	OSCI	Oscillator input
14	OSCO	Oscillator output
15	T57	57kHz clock signal output
16	RDCL	RDS clock output

3. Block diagram

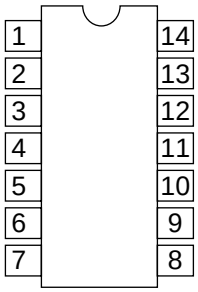


■ IC-PST600M/G/-W (IC702) : System reset



■HD74HC126FP-X (IC771) : Buffer

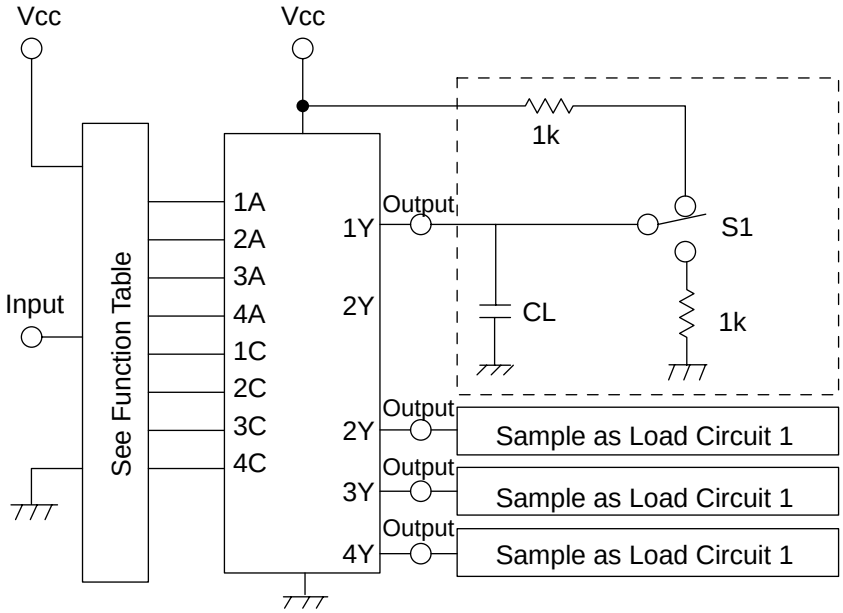
1. Pin layout



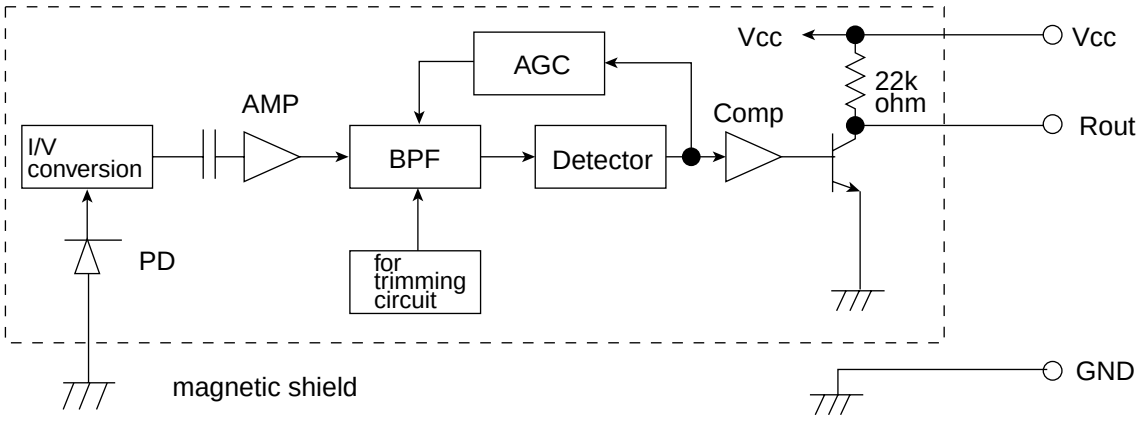
2. Pin function

Inputs		Outputs
C	A	Y
L	X	Z
H	L	H
H	H	L

3. Block diagram

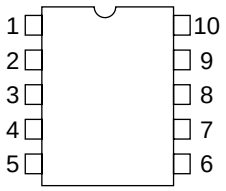


■ RPM6938-SV4 (IC602) : Remote control receiver

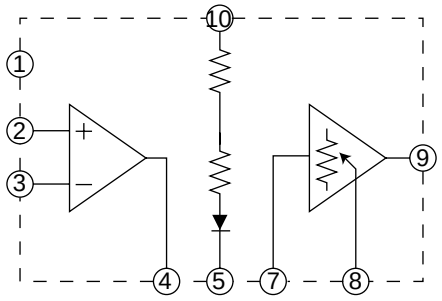


■ M5282FP-XE (IC321) : E. volume

1. Pin layout



2. Block diagram

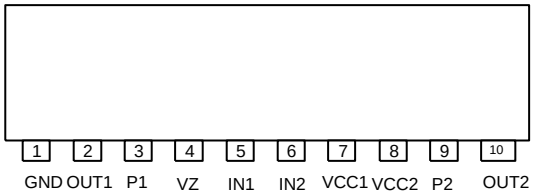


3. Pin function

Pin No.	Symbol	Function
1	Vcc/2	Vcc/2 output for microphone amp.
2	Amp+IN	Microphone amp. positive input terminal.
3	Amp-IN	Microphone amp. negative input terminal.
4	Amp OUT	Microphone amp. output terminal.
5	GND	Ground.
6	NC	Non connection.
7	VCA IN	VCA input terminal.
8	Vc	VCA control terminal.
9	VCA OUT	VCA output terminal.
10	Vcc	Power supply.

■ LB1641 (IC402) : DC Motor driver

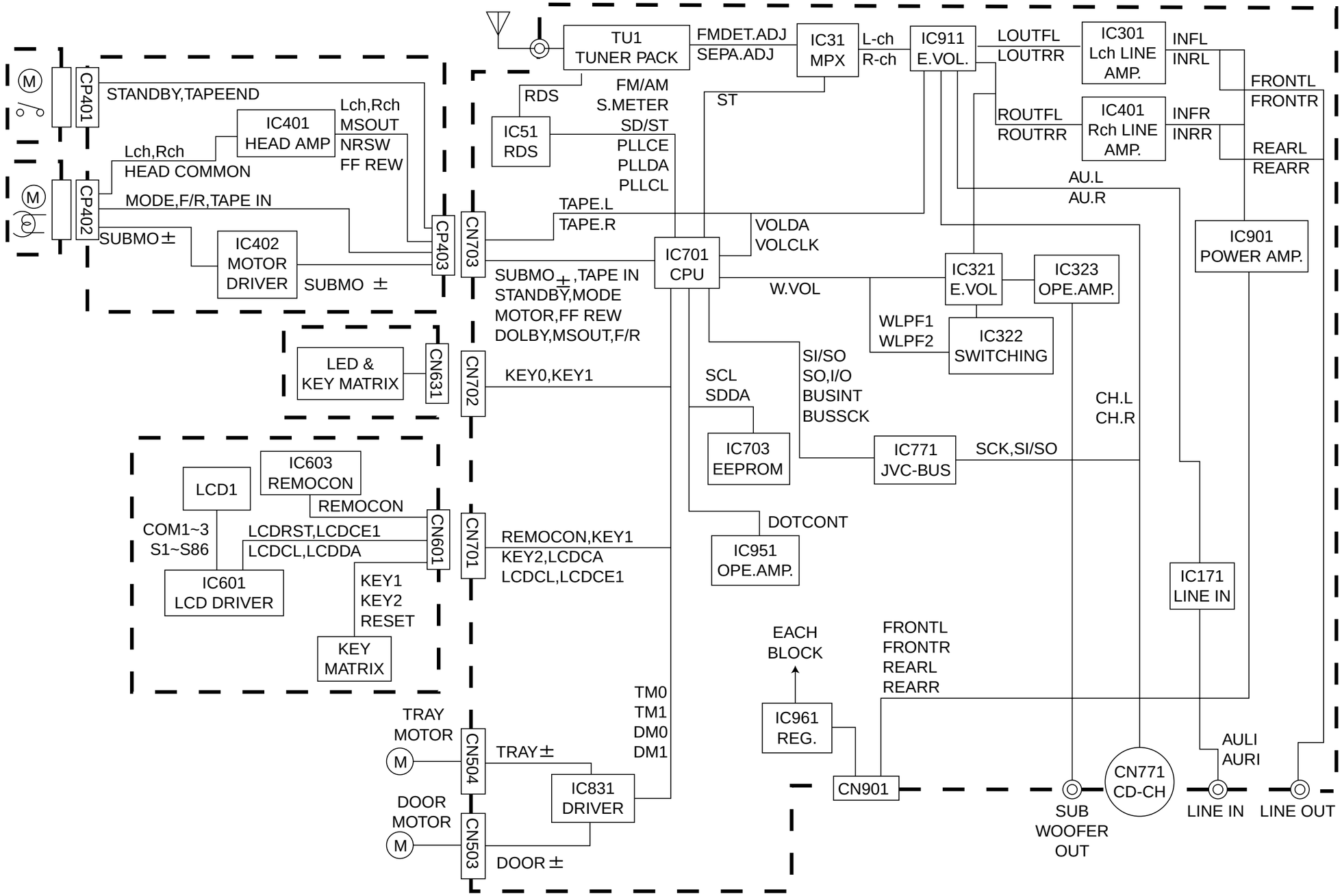
1. Pin layout



2. Pin function

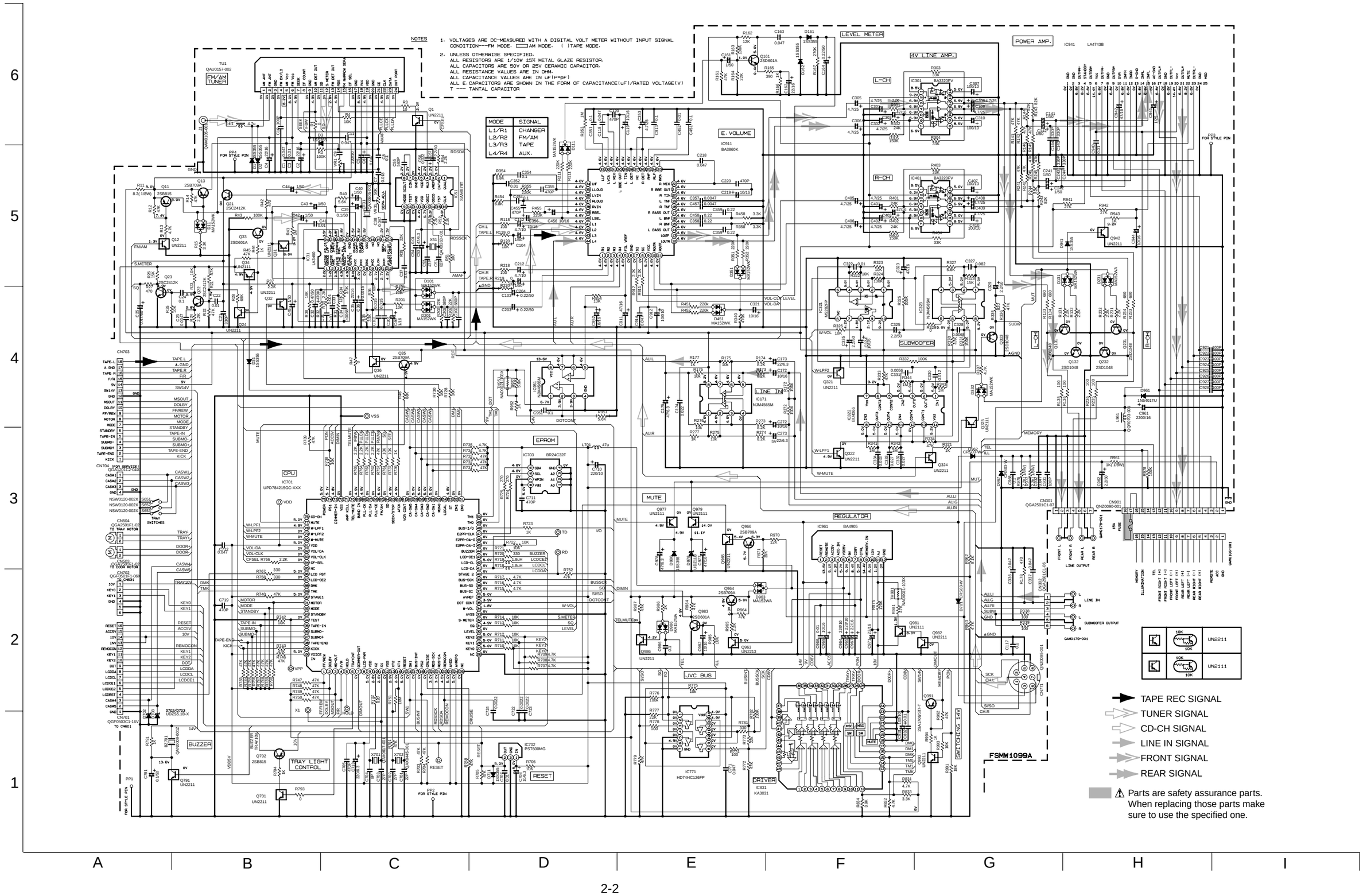
Input		Output		Mode
IN1	IN2	OUT1	OUT2	
0	0	0	0	Brake
1	0	1	0	CLOCKWISE
0	1	0	1	COUNTER-CLOCKWISE
1	1	0	0	Brake

Block diagram

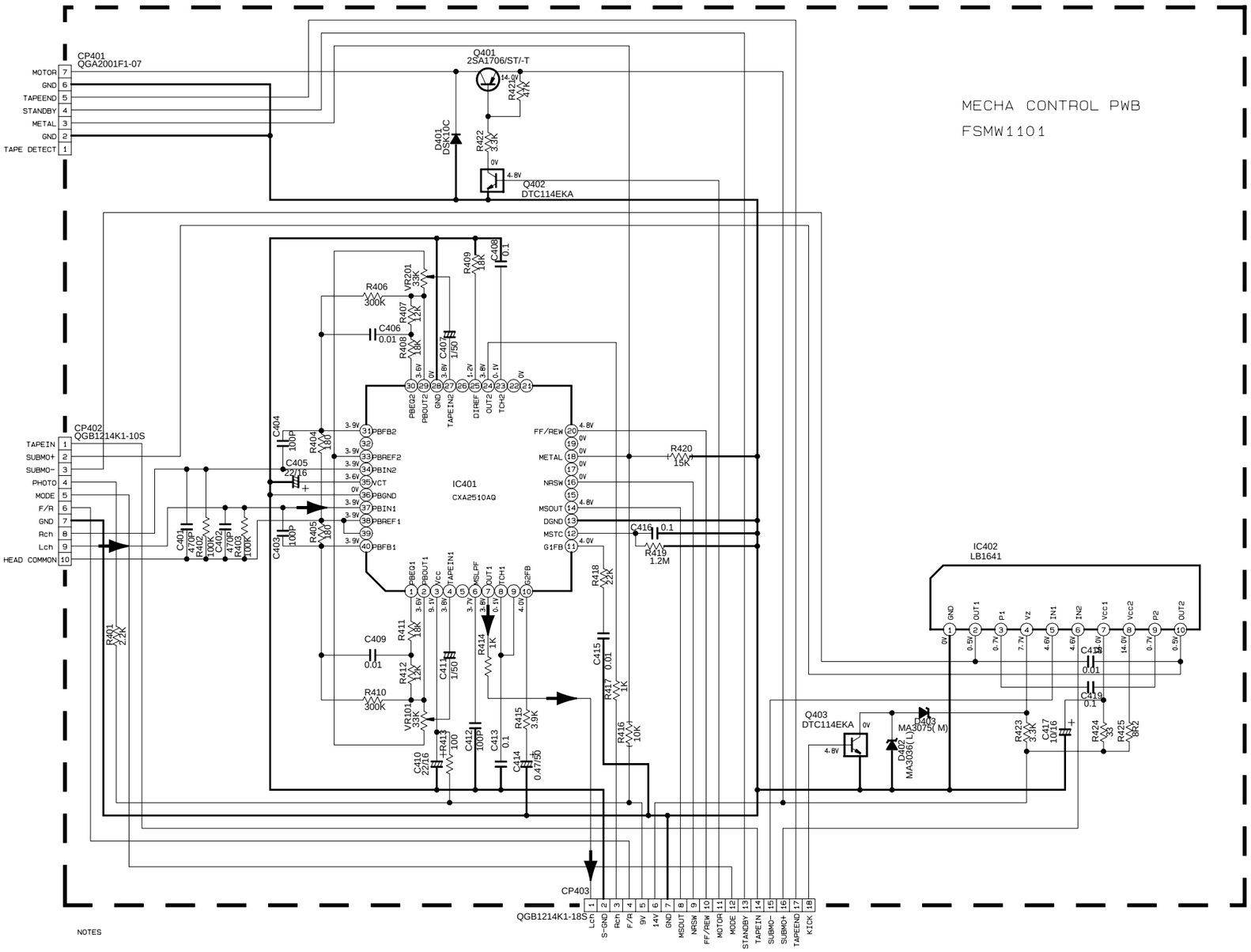


Standard schematic diagrams

■ Main amp. section



■ Mecha. control section



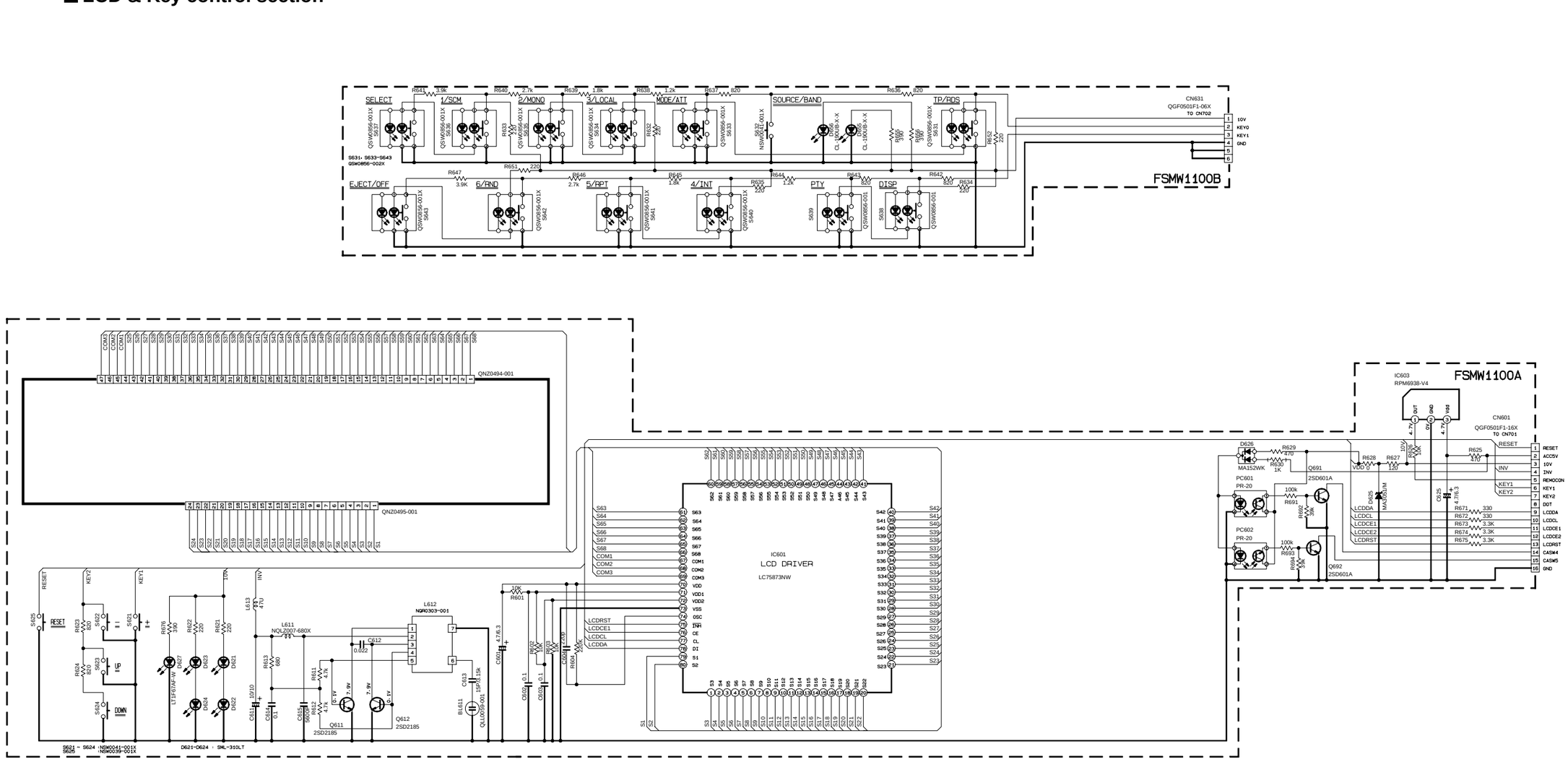
NOTES

1. VOLTAGES ARE DC-MEASURED WITH A DIGITAL VOLT METER WITHOUT INPUT SIGNAL.
   CONDITION----TAPE MODE.
2. UNLESS OTHERWISE SPECIFIED.
   ALL RESISTORS ARE 1/4W ±5% OR 1/10W ±5% METAL GLAZE RESISTOR.
   ALL CAPACITORS ARE 50V CERAMIC CAPACITOR.
   ALL RESISTANCE VALUES ARE IN OHM(Ω).
   ALL CAPACITANCE VALUES ARE IN μF(P=pF).
   ALL E.CAPACITORS ARE SHOWN IN THE FORM OF CAPACITANCE(μF)/RATED VOLTAGE(V)

TF-----TF CAPACITOR

→ TAPE REC SIGNAL

■ LCD & Key control section



NOTES

1. VOLTAGES ARE DC-MEASURED WITH A DIGITAL VOLT METER WITHOUT INPUT SIGNAL CONDITION --- TAPE MODE
2. UNLESS OTHERWISE SPECIFIED.
   ALL RESISTORS ARE 1/10W ±5% METAL GLAZE RESISTOR.
   ALL CAPACITORS ARE 50V OR 25V CERAMIC CAPACITOR.
   ALL RESISTANCE VALUES ARE IN OHM.
   ALL CAPACITANCE VALUES ARE IN uF(P=pF)
   ALL E.CAPACITORS ARE SHOWN IN THE FORM OF CAPACITANCE(uF)/RATED VOLTAGE(V)
   T --- TANTAL CAPACITOR